

Appl. No.: 09/913,163

August 5, 2003

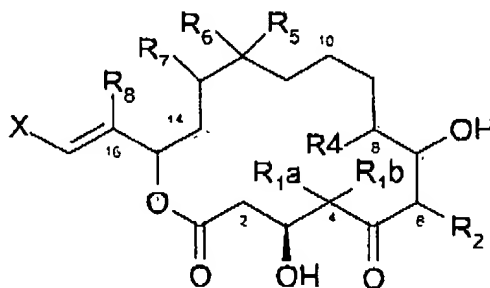
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This listing of claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1. (Currently amended) An epothilone compound of formula I.



in which

R^4 means hydrogen, C_1 - C_{10} alkyl, aryl, C_7 - C_{20} aralkyl,

R^5 means hydrogen, C_1 - C_{10} alkyl, aryl, C_7 - C_{20} aralkyl.

wherein, for R^4 and R^5 , aryl is phenyl, ~~naphthyl, furyl, thienyl, pyridyl, pyrazolyl, pyrimidinyl, oxazolyl, pyridazinyl, pyrazinyl, quinolyl, thiazolyl,~~ which are optionally substituted in one or more places by halogen, OH, O-alkyl, CO_2H , CO_2 -alkyl, $-NH_2$, $-NO_2$, $-N_3$, $-CN$, C_1 - C_{20} alkyl, C_1 - C_{20} acyl and/or C_1 - C_{20} acyloxy groups, and ~~wherein ring heteroatoms can be oxidized, and~~

wherein, for R^4 and R^5 , aralkyl is benzyl, phenylethyl, ~~naphthylmethyl, naphthylethyl, furylmethyl, thienylethyl, or pyridylpropyl,~~ which are optionally substituted in one or more places by halogen, OH, O-alkyl, CO_2H , CO_2 -alkyl, $-NO_2$, $-N_3$, $-CN$, C_1 - C_{20} alkyl, C_1 - C_{20} acyl and/or C_1 - C_{20} acyloxy groups

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R⁶, R⁷ each mean a hydrogen atom, or together mean an additional bond to result in a double bond on the ring between their two positions or together mean an oxygen atom to provide an epoxide ring,

R⁸ means a methyl group or hydrogen.

and at the same time, R^{1a} and R^{1b} together stand for a trimethylene group, R² stands for a phenyl or benzyl radical, and X stands for a 2-pyridyl, 2-methyl-4-thiazolyl or 2-methyl-4-oxazolyl radical or

at the same time R^{1a} and R^{1b} together stand for a trimethylene group, R² stands for a methyl, ethyl or propyl group and X stands for a 2-pyridyl, 2-methyl-4-thiazolyl or 2-methyl-4-oxazolyl radical or

at the same time R^{1a} and R^{1b} in each case stand for a methyl group, R² stands for a methyl, ethyl or propyl radical, and X stands for a 2-pyridyl, 2-methyl-4-thiazolyl or 2-methyl-4-oxazolyl radical,

whereby the nitrogen atom and/or the sulfur atom in X can be present in oxidized form, and whereby, if R² and R⁸ in each case mean a methyl radical, X can be only one 2-pyridyl radical that is optionally oxidized on the nitrogen atom, including all possible stereoisomers.

2. (Previously presented) A compound according to claim 1, in which R⁸ is a hydrogen atom.

3. (Previously presented) A compound according to claim 1, in which R⁸ is a methyl group.

4. (Previously presented) A compound according to claim 1, in which R² is an ethyl group.

5. (Previously presented) A compound according to claim 1, in which R² is a propyl group.

6. (Previously presented) A compound according to claim 2, in which R^{1a} and R^{1b} together mean a trimethylene group.

7. (Previously presented) A compound according to claim 3, in which R^{1a} and R^{1b} together mean a trimethylene group.

8. (Previously presented) A compound according to claim 6, in which X means a 2-pyridyl radical that is oxidized on the nitrogen atom.

9. (Previously presented) A compound according to claim 7, in which X means a 2-pyridyl radical that is oxidized on the nitrogen atom.

10. (Previously presented) A compound according to claim 2, in which X means a 2-pyridyl radical that is optionally oxidized on the nitrogen atom.

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11. (Previously presented) A compound according to claim 4, in which R^{1a} and R^{1b} together mean a trimethylene group.

12. (Previously presented) A compound according to claim 5, in which R^{1a} and R^{1b} together mean a trimethylene group.

13. (Previously presented) A compound according to claim 11, in which X means a 2-pyridyl radical that is optionally oxidized on the nitrogen atom.

14. (Previously presented) A compound according to claim 12, in which X means a 2-pyridyl radical that is optionally oxidized on the nitrogen atom.

15. (Previously presented) A compound according to claim 2, in which R² means an ethyl group, R^{1a} and R^{1b} together mean a trimethylene group and X means a 2-pyridyl radical that is optionally oxidized on the nitrogen atom.

16. (Previously presented) A compound according to claim 2, in which R² means a propyl group, R^{1a} and R^{1b} together mean a trimethylene group, and X means a 2-pyridyl radical that is optionally oxidized on the nitrogen atom.

17. (Previously presented) A compound according to claim 10, in which R² is a propyl group.

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18. (Previously presented) A compound according to claim 1, in which R⁵ is a methyl group.

19. (Previously presented) A compound according to claim 1, in which R^{1a} and R^{1b} in each case stand for a methyl group and R² stands for a methyl or propyl group.

20. (Previously presented) A compound of formula 1, of claim 1, which is:
(4S,7R,8S,9S,13(E or Z),16S(E))-4,8-Dihydroxy-16-(2-(2-methyl-4-thiazolyl)ethenyl)-1-oxa-5,5,7,9,13-pentamethyl-cyclohexadec-13-ene-2,6-dione.

(1(S or R),3S(E),7S,10R,11S,12S,16R)-7,11-Dihydroxy-3-(2-(2-methyl-4-thiazolyl)ethenyl)-8,8,10,12,16-pentamethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(1(R or S),3S(E),7S,10R,11S,12S,16S)-7,11-Dihydroxy-3-(2-(2-methyl-4-thiazolyl)ethenyl)-8,8,10,12,16-pentamethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(4S,7R,8S,9S,13(E or Z),16S(E))-4,8-Dihydroxy-7-ethyl-16-(2-(2-methyl-4-thiazolyl)ethenyl)-1-oxa-5,5,9,13-tetramethyl-cyclohexadec-13-ene-2,6-dione.

(1(S or R),3S(E),7S,10R,11S,12S,16R)-7,11-Dihydroxy-10-ethyl-3-(2-(2-methyl-4-thiazolyl)ethenyl)-8,8,12,16-tetramethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(1(R or S),3S(E),7S,10R,11S,12S,16S)-7,11-Dihydroxy-10-ethyl-3-(2-(2-methyl-4-thiazolyl)ethenyl)-8,8,12,16-tetramethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(4S,7R,8S,9S,13(E or Z),16S(E))-4,8-Dihydroxy-16-(1-methyl-2-(2-pyridyl)ethenyl)-1-oxa-5,5-(1,3-trimethylene)-7,9,13-trimethyl-cyclohexadec-13-ene-2,6-dione.

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(1(S or R),3S(E),7S,10R,11S,12S,16R)-7,11-Dihydroxy-3-(1-methyl-2-(2-pyridyl)ethenyl)-8,8-(1,3-trimethylene)-10,12,16-trimethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(1(R or S),3S(E),7S,10R,11S,12S,16S)-7,11-Dihydroxy-3-(1-methyl-2-(2-pyridyl)ethenyl)-8,8-(1,3-trimethylene)-10,12,16-trimethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(4S,7R,8S,9S,13(E or Z),16S(E))-4,8-Dihydroxy-16-(2-(2-methyl-4-thiazolyl)ethenyl)-1-oxa-5,5-(1,3-trimethylene)-7,9,13-trimethyl-cyclohexadec-13-ene-2,6-dione.

(1(S or R),3S(E),7S,10R,11S,12S,16R)-7,11-Dihydroxy-3-(2-(2-methyl-4-thiazolyl)ethenyl)-8,8-(1,3-trimethylene)-10,12,16-trimethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(1(R or S),3S(E),7S,10R,11S,12S,16S)-7,11-Dihydroxy-3-(2-(2-methyl-4-thiazolyl)ethenyl)-8,8-(1,3-trimethylene)-10,12,16-trimethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(4S,7R,8S,9S,13(E or Z),16S(E))-4,8-Dihydroxy-16-(2-(2-pyridyl)ethenyl)-1-oxa-5,5,7,9,13-pentamethyl-cyclohexadec-13-ene-2,6-dione.

(1(S or R),3S(E),7S,10R,11S,12S,16R)-7,11-Dihydroxy-3-(2-(2-pyridyl)ethenyl)-8,8,10,12,16-pentamethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(1(R or S),3S(E),7S,10R,11S,12S,16S)-7,11-Dihydroxy-3-(2-(2-pyridyl)ethenyl)-8,8,10,12,16-pentamethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(4S,7R,8S,9S,13(E or Z),16S(E))-4,8-Dihydroxy-7-ethyl-16-(1-methyl-2-(2-pyridyl)ethenyl)-1-oxa-5,5-(1,3-trimethylene)-9,13-dimethyl-cyclohexadec-13-ene-2,6-dione.

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(1(S or R),3S(E),7S,10R,11S,12S,16R)-7,11-Dihydroxy-10-ethyl-3-(1-methyl-2-(2-pyridyl)ethenyl)-8,8-(1,3-trimethylenc)-12,16-dimethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(1(R or S),3S(E),7S,10R,11S,12S,16S)-7,11-Dihydroxy-10-ethyl-3-(1-methyl-2-(2-pyridyl)ethenyl)-8,8-(1,3-trimethylenc)-12,16-dimethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(4S,7R,8S,9S,13(E or Z),16S(E))-4,8-Dihydroxy-7-ethyl-16-(2-(2-methyl-4-thiazolyl)cthenyl)-1-oxa-5,5-(1,3-trimethylcne)-9,13-dimethyl-cyclohexadec-13-ene-2,6-dione.

(1(S or R),3S(E),7S,10R,11S,12S,16R)-7,11-Dihydroxy-10-ethyl-3-(2-(2-methyl-4-thiazolyl)cthenyl)-8,8-(1,3-trimethylene)-12,16-dimethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(1(R or S),3S(E),7S,10R,11S,12S,16S)-7,11-Dihydroxy-10-ethyl-3-(2-(2-methyl-4-thiazolyl)cthenyl)-8,8-(1,3-trimethylene)-12,16-dimethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(4S,7R,8S,9S,13(E or Z),16S(E))-4,8-Dihydroxy-7-ethyl-16-(2-(2-pyridyl)ethenyl)-1-oxa-5,5,9,13-tetramethyl-cyclohexadec-13-ene-2,6-dione.

(1(S or R),3S(E),7S,10R,11S,12S,16R)-7,11-Dihydroxy-10-ethyl-3-(2-(2-pyridyl)cthenyl)-8,8,12,16-tetramethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(1(R or S),3S(E),7S,10R,11S,12S,16S)-7,11-Dihydroxy-10-ethyl-3-(2-(2-pyridyl)cthenyl)-8,8,12,16-tetramethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(4S,7R,8S,9S,13(E or Z),16S(E))-4,8-Dihydroxy-7-ethyl-16-(2-(2-pyridyl)ethenyl)-1-oxa-5,5-(1,3-trimethylcne)-9,13-dimethyl-cyclohexadec-13-ene-2,6-dione.

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(1(S or R).3S(E).7S.10R.11S.12S.16R)-7,11-Dihydroxy-10-ethyl-3-(2-(2-pyridyl)ethenyl)-8,8-(1,3-trimethylene)-12,16-dimethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(1(R or S).3S(E).7S.10R.11S.12S.16S)-7,11-Dihydroxy-10-ethyl-3-(2-(2-pyridyl)ethenyl)-8,8-(1,3-trimethylene)-12,16-dimethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(4S,7R,8S,9S,13Z,16S(E))-4,8-Dihydroxy-16-(1-methyl-2-(2-pyridyl)ethenyl)-1-oxa-7-propyl-5,5,9,13-tetramethyl-cyclohexadec-13-ene-2,6-dione.

(1S,3S(E).7S.10R.11S.12S.16R)-10-Propyl-7,11-dihydroxy-3-(1-methyl-2-(2-N-oxidopyridyl)ethenyl)-8,8,12,16-tetramethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(1R,3S(E).7S.10R.11S.12S.16S)-10-Propyl-7,11-dihydroxy-3-(1-methyl-2-(2-N-oxidopyridyl)ethenyl)-8,8,12,16-tetramethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(1S,3S(E).7S.10R.11S.12S.16R)-10-Propyl-7,11-dihydroxy-3-(1-methyl-2-(2-pyridyl)ethenyl)-8,8,12,16-tetramethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(1R,3S(E).7S.10R.11S.12S.16S)-10-Propyl-7,11-dihydroxy-3-(1-methyl-2-(2-pyridyl)ethenyl)-8,8,12,16-tetramethyl-4,17-dioxabicyclo[14.1.0]heptadecane-5,9-dione.

(4S,7R,8S,9S,13E,16S(E))-4,8-Dihydroxy-16-(1-methyl-2-(2-pyridyl)ethenyl)-1-oxa-7-propyl-5,5,9,13-tetramethyl-cyclohexadec-13-ene-2,6-dione.

(1R,3S(E).7S.10R.11S.12S.16R)-10-Propyl-7,11-dihydroxy-3-(1-methyl-2-(2-N-oxidopyridyl)ethenyl)-8,8,12,16-tetramethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(1S,3S(E).7S.10R.11S.12S.16S)-10-Propyl-7,11-dihydroxy-3-(1-methyl-2-(2-N-oxidopyridyl)ethenyl)-8,8,12,16-tetramethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione.

(1R,3S(E).7S.10R.11S.12S.16R)-10-Propyl-7,11-dihydroxy-3-(1-methyl-2-(2-pyridyl)ethenyl)-8,8,12,16-tetramethyl-4,17-dioxabicyclo[14.1.0]heptadeca-5,9-dione, or

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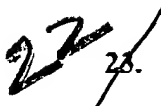
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(1S,3S(E),7S,10R,11S,12S,16S)-10-Propyl-7,11-dihydroxy-3-(1-methyl-2-(2-pyridyl)cthenyl)-8,8,12,16-tetramethyl-4,17-dioxabicyclo[14.1.0]heptadcca-5,9-dione.

 21. (Previously presented) A pharmaceutical composition comprising at least one compound of formula I according to claim 1 above as well as a pharmaceutically compatible vehicle.

22. (Canceled)

 23. (Previously presented) A method for preparing a pharmaceutical agent which comprises formulating a compound of formula I according to claim 1 in a form suitable for pharmaceutical administration.

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From-MILLEN, WHITE, ZELANO & BRANIGAN

Dec-08-03 06:38pm